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## REPORTS OF THE COMMITTEE ON ELECTROLYSIS<sup>1</sup>

### MAJORITY REPORT

Your Committee on Electrolysis begs leave to submit the following report:

At the last convention of the Association your Committee on Electrolysis submitted a report which consisted of brief statements of fact and of the stand which the committee believed the Association may properly take in regard to the electrolysis situation. This report was received by the Association, ordered printed in the minutes, and the committee was continued for further consideration of the subject. As a result of further study of this subject during the past year, your committee has somewhat modified statement 5 relating to the application of mitigating methods to underground water pipes for the purpose of making this statement more exact, and has added a clause in the last sentence of statement 6, for the purpose of more clearly stating the opinion of the committee with reference to the use of metallic connections from underground water pipes to the railway return circuit. With these two modifications your committee begs in the following to repeat the statements presented in the previous report, and hopes that the Association may find itself in agreement with these statements and will approve the report.

1. An increasing amount of damage from stray electric currents is occurring on the underground water piping systems in many localities throughout the country where adequate measures have not been taken to reduce this damage.

2. The principal and generally the sole sources of stray electric currents causing this damage are single-trolley direct-current electric railways employing the running tracks in contact with earth as part of the return circuit.

3. Inasmuch as such electric railways are the chief and generally the sole sources of stray currents causing the damage, and as the owners of such railways have no right to so operate their railway systems as to cause serious damage to the property of others, it is the duty of the owners of these railways to provide measures for reducing this trouble by removing its cause as far as this is practicable.

<sup>1</sup>Presented at the Richmond convention, May 10, 1917.

4. Experience extending over many years in foreign countries and over ten years in this country has shown that methods which are practicable and economical can be applied to electric railway systems which will remove acute dangers from stray currents and which will very greatly reduce the danger in all cases where bad electrolysis conditions exist, and in most cases will reduce this danger to negligible amounts.

5. Your committee believes that mitigating methods applied to underground water pipes fail to attack the real cause of the trouble. Your committee further believes that mitigating methods should be applied to underground pipes, if at all, only in special cases and only after adequate methods of minimizing the production of stray currents have been applied to the railway system.

6. Your committee disapproves as not only inadequate but frequently also as dangerous such metallic connections from underground water pipes to the railway return circuit as cause these pipes to become a substantial part of the railway return circuit. Such connections greatly increase current flow on pipes, and while they may afford local protection they generally distribute electrolysis troubles to other localities where these are more difficult to find, and thus frequently give a false impression of immunity. Your committee therefore believes that metallic connections from water pipes to the railway return circuit should generally not be permitted and in no case unless a careful study of conditions has shown that no serious danger will be produced. Such connections should in the opinion of your committee never be applied to an underground piping system as the principal means for electrolysis mitigation.

7. Your committee believes in view of the fact that the railway companies in common with the pipe owning companies are public utilities operating under public franchises and utilizing city streets, that it is the duty of both of these utilities to coöperate in order that the causes and extent of any danger from stray current can be more readily ascertained and the problem can be attacked along broad engineering lines.

Respectfully submitted,

ALBERT F. GANZ, *Chairman.*

DANIEL D. JACKSON

ROBERT H. JACKSON

EDWARD E. MINOR

## MINORITY REPORT

At the twentieth annual meeting of this Association held at Richmond, Virginia, May 15 to 18, 1900, a special committee including Dabney H. Maury, George H. Benzenberg and J. Waldo Smith, reported on the question of electrolysis. The report was published in the *Proceedings* of 1900, pages 180-182. Action on this report was deferred in order that the Association's membership should have abundant opportunity to study the recommendations made in the report, which was printed and distributed. It was afterwards adopted at the Twenty-first Annual Meeting, held in New York City, June 17 to 21, 1901. The report was again published in the *Proceedings* of 1901, pages 76-79, and the Association confirmed its adoption for fourteen consecutive years.

The statements of fact contained in the original report are as true to-day as they were then. It is still true that pipe-owners cannot protect their property from damage caused by stray electric currents. It is still true that methods are known whereby operators of electric railways can control the currents used by them. Therefore, the following is respectfully submitted for your approval as expressing the attitude of this Association.

WHEREAS: Damage to underground pipe systems caused by electric currents generated and used by electric railway companies continues; therefore, be it

*Resolved*, by the American Water Works Association, that electric railways should control all current generated or used by them so that it will not flow upon the water mains and service pipes connected to or belonging to the water works system of cities, and this should be done by the electric railways at their own cost.

CHARLES R. HENDERSON.